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## Argumentative moves in a thought experiment

### Movimientos argumentativos en un experimento del pensamiento

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**Abstract:** A thought experiment is a form of academic interaction in which two or more scholars discuss based on an imaginary scenario the acceptability of an academic claim. The argumentative dimension of thought experiments has been the subject of intense debates: for some scholars, thought experiments are nothing but arguments; for others, they *cannot be* arguments. In this paper I propose approaching the argumentative dimension of thought experiments with pragma-dialectical reconstruction tools. After a brief outline of the main positions taken with respect to the argumentative dimension of thought experiments, I explain the benefits of the proposed approach and I illustrate these by reconstructing a thought experiment as an exchange of argumentative moves. I conclude by reassessing the main positions taken in the debate.

**Keywords:** Thought experiments, argumentation, pragma-dialectics, speech acts.

**Resumen:** Un experimento del pensamiento es una forma académica de interacción en la que dos o más académicos discuten basados en un escenario imaginario respecto de la aceptabilidad de una pretensión académica. La dimensión argumentativa de un experimento del pensamiento ha sido materia de intenso debate: para algunos investigadores, los experimentos del pensamiento no son otra cosa que argumentos; para otros, ellos no pueden ser argumentos. En este trabajo propongo aproximarnos a la dimensión argumentativa de los experimentos del pensamiento con las herramientas de reconstrucción de la pragma-dialéctica. Después de una breve descripción de las principales posiciones respecto de la dimensión argumentativa de los experimentos del pensamiento, explico los beneficios del acercamiento propuesto y los ilustro re-

construyendo un experimento del pensamiento en tanto intercambio de movimientos argumentativos. Concluyo reconsiderando las posiciones centrales del debate.

**Palabras clave:** Experimentos del pensamiento, argumentación, pragma-dialéctica, actos de habla.

## 1. Introduction

Thought experiments are instances of academic communicative interaction in which imaginary scenarios (i.e. stories about fictional objects and events) are employed for the purpose of testing academic claims. Some well-known thought experiments are the *Chinese Room* thought experiment (Searle, 1980), the *Twin Earth* thought experiment (Putnam, 1973; 1996), and the *Falling bodies* thought experiment (Galilei, 1954). The question I want to address in this paper is a deceptively simple one: Are thought experiments arguments? The question has sprung long-lasting debates between philosophers and scientists: to some, the answer is clearly ‘Yes’; to others, it is clearly ‘No.’ While scholars generally agree that thought experiments have some argumentative features, it seems that analysing these features in more detail is problematic.

Let me introduce an example of a thought experiment that will serve as an illustration for this paper. The imaginary scenario in this thought experiment was set forth by Frank Jackson in a paper entitled *Epiphenomenal qualia* (Jackson, 1982). The paper as a whole is concerned with a philosophical principle known as ‘physicalism.’ According to this principle, the world is entirely physical, meaning that every event can be reduced to, and thus understood in terms of, an interaction of physical entities – roughly speaking, particles in motion.<sup>1</sup> Jackson, who opposes this principle, constructed an imaginary scenario in which a “brilliant scientist” investigates the world from a peculiar black-and-white room. The relevant passage is the following:

<sup>1</sup> For a more detailed analysis of physicalism and its relationship with this thought experiment, see the collection of papers in Ludlow, Nagasawa and Stoljar, Eds. (2004).

1 Mary is a brilliant scientist who is, for whatever reason, forced to investigate the  
2 world from a black and white room via a black and white television monitor. She  
3 specializes in the neurophysiology of vision and acquires, let us suppose, all the  
4 physical information there is to obtain about what goes on when we see ripe  
5 tomatoes, or the sky, and use terms like 'red', 'blue', and so on. She discovers, for  
6 example, just which wavelength combinations from the sky stimulate the retina, and  
7 exactly how this produces via the central nervous system the contraction of the vocal  
8 chords and expulsion of air from the lungs that results in the uttering of the sentence  
9 'The sky is blue' [...]

(Jackson, 1982, p. 130)

On the basis of this imaginary scenario, Jackson judges physicalism to be false:

10 [...] What will happen when Mary is released from her black and white room or is  
11 given a colour television monitor? Will she learn anything or not? It seems just  
12 obvious that she will learn something about the world and our visual experience of it.  
13 But then is it inescapable that her previous knowledge was incomplete. But she had  
14 all the physical information. Ergo there is more to have than that, and Physicalism is  
15 false. Clearly the same style of Knowledge argument could be deployed for taste,  
16 hearing, the bodily sensations and generally speaking for the various mental states  
17 which are said to have (as it is variously put) raw feels, phenomenal features or  
18 qualia. The conclusion in each case is that the qualia are left out of the physicalist  
19 story. And the polemical strength of the Knowledge argument is that it is so hard to  
20 deny the central claim that one can have all the physical information without having  
21 all the information there is to have.

(Jackson, *idem*)

Jackson calls this “the Knowledge *argument*” (line 15) and it is indeed a common practice to use the terms “thought experiment” and “argument” interchangeably.<sup>2</sup> Nevertheless, some scholars have vehemently disputed equating thought experiments with arguments. The debate between what might be called the “argument view” and the “no-argument view” will be outlined in the following section. At this point, let me briefly note that neither side seems to be in the grip of some obvious misjudgement. For, on

<sup>2</sup> For “the Chinese room argument” see Damper (2004) and Searle (2006); for “the Twin Earth argument” see Stalnaker (1993).

the one hand, the presence of an imaginary scenario which is *supposed* rather than *asserted*, conflicts with the typical conception of arguments as made up of, or based on, assertions (Fisher, 1989, p. 402). If Jackson's contribution turns out to be one big argument after all, we must, it seems, explain away these non-assertive acts. On the other hand, the whole point of the text is clearly that of having the audience (i.e. those who are more or less committed to physicalism) convince that physicalism is in fact false. But then, if the text turns out to be one big non-argumentative stretch of discourse after all, the use of "*ergo*" in line 14, to name only the most conspicuous argumentative indicator, needs to be explained away.

The existence of such prima-facie cases on both sides is probably what kept the above-mentioned debate going since the first sparkle in the early 1990s. The point of this paper is to show that, when looked at from a certain pragmatic perspective, the apparent bind between these two opposing answers is just that – an *apparent* bind.

## 2. The vague argumentative dimension of thought experiments

Until the early 1990s, thought experiments were discussed only in passing, and more as curious cases in the history of science rather than prototypical forms of academic discourse (Kuhn, 1977; Popper, 1992 [1968]; Fodor, 1964; Mach, 1976 [1889]). Subsequently, several monographs and collections of essays lead to a more thorough investigation of the practice (Horowitz & Massey, 1991; Brown, 1991; Norton, 1991; 1996; 2004; Gendler, 1996; 2000; Bishop, 1999; De Mey, 2003; Häggqvist, 1996; 2007; Frappier, Meynell, & Brown, 2013). One of the questions that fuelled these investigations concerns what we might call the *argumentative dimension* of thought experiments: Are they, as Norton put it, "merely picturesque arguments" (Norton, 2004, p. 1139), or is it the case, as Bishop put it, that "thought experiments cannot be arguments" (Bishop, 1999, p. 540)? I refer to these two positions as the "argument view" and the "no-argument view" respectively.

For Norton "to conduct a thought experiment is to execute an argument" (1996, p. 356). More concretely, thought experiments are "arguments that carry us from our assumptions to a conclusion [...]" Insofar as the device merely reorganizes, it is a deductive argument; insofar as it generalizes in

the broadest sense, it is an inductive argument ” (Norton, *ibid.*, p. 335). Just as Rescher (1991), Picha (2011), and other proponents of this view, Norton defends his position by showing that a thought experiment can be reconstructed as an argument – the assumption being that if something can be reconstructed as an argument, it is an argument. This is sometimes referred to as the “elimination thesis” (Gendler, 2000), one of its consequences being that the original text of the thought experiment is eliminated and replaced by the reconstructed version (see Norton, 1996, pp. 341-6).

In reading an earlier version of this text, a colleague of mine pointed out that the argument view can effectively capture the argumentative dimension of thought experiments in a different way: a thought experiment, my colleague suggested, is simply a *reductio ad absurdum*. This is an interesting variation on the ‘argument view,’ one that roughly follows Rescher (1991). To go back to Jackson’s case, if you are a physicalist *and* you claim that Mary does learn something new while having all physical knowledge, you are, so it seems, contradicting yourself. Jackson’s contribution has undoubtedly a ‘*reductio* feel’ to it. Yet one can easily take note of some structural differences (pre-analytically, for now). First, a *reductio ad absurdum* proceeds by assuming a proposition *p* to be true and, through various derivations that lead to a contradiction, demonstrates *p* to be false. But at no point in such a process does one need a full-blown imaginary scenario or any other kind of stories. Second, Jackson does not aim to show that physicalism is *self*-contradictory or that physicalism leads to a logical contradiction. Rather, Jackson’s puts forward a case to the effect that, since qualia “are left out of the physicalist story” (line 19), one should desist from maintaining the acceptability of the physicalist standpoint. Thus, to put it rather crudely, Jackson is not in the business of *demonstrating* logically, he is in the business of *convincing* (hence the importance of the “polemical strength” of the argument, see line 19).

This is then, in broad strokes, the argument view. Let me now move to the no-argument view. According to Brown (1991; 2007), Arthur (1999) and Gendler (1998; 2000; 2004), to equate thought experiments with arguments is to miss some essential point about the practice. For example, Brown argues that at least in some cases reconstructing thought experiments as arguments would obscure the way in which the participants “grasp,” if all goes well, abstract laws and entities. Scholars refer to this

conception as the “Platonic view” of thought experiments. According to this strand within the no-argument view, thought experiments are devices that allow readers to *see* the laws of nature (Brown, 1991, pp. 75-86). In a similar vein, Gendler argues that the reconstruction test (i.e. basing the classification on our ability to reconstruct thought experiments as arguments) is unsatisfactory since the analysis misses a “quasi-observationally” aspect of the practice (Gendler, 2004, p. 1154).

There is another form of defence put forth for this ‘no-argument’ camp. Fisher (1989) and Bowels (1993) emphasize that thought experiments are based on *suppositions*, whereas arguments are, by definition, based on *assertions*. The speaker’s commitment, in each case, is clearly different. In the case of suppositions, one is *not* committed to the acceptability of the expressed propositional content, while in the case of assertions one *is* committed to its acceptability. In Jackson’s case, the writer asks us to *suppose* that Mary is in such-and-such situation, which is an altogether different act than *affirming* the situation actually took place. The imaginary scenario, then, is what throws off the equivalence between thought experiments and arguments (Fisher, 1989, p. 403).

The variety of positions that have been taken in this debate is, of course, not captured by this short overview.<sup>3</sup> Yet the crux of the discussion should be clear. Thought experiments seem to have an obvious argumentative dimension yet pinpointing this dimension brings one into conceptual problems.

### 3. The use of a pragmatic approach

When a set membership is problematic and becomes the source of debates, one must be suspicious of talk at cross-purposes. After all, if the disagreeing parties are working with the same definitions and within the same approach, the matter is, so to speak, a computational one. The question “Does set *A* (‘argument’) include set *T* (‘thought experiment’)?” would be straightforwardly answered by looking up *T* in *A* or by checking whether *T* fulfils

<sup>3</sup> For more detailed overviews see De Mey (2003) and Mouse, Masavetas and Karayianni (2006).

conditions for set-membership in *A*. Since this is *not* how the argument/no-argument debate was carried out, one is justified in surmising that (a) the super-set *A* is fuzzy or (b) the parties work with different methods for checking whether *T* is a sub-set of *A*.

I think that both (a) and (b) reflect to some extent the prevalent situation in the argument/no-argument debate. The scholars involved in this debate do not work with the same concept of argument, nor do they work with the same reconstruction method. This becomes apparent when *T* is constant, that is, when scholars employ one and the same instance of thought experimentation in order to defend their position in the debate. The *Falling bodies* thought experiment from Galileo's *Two new sciences* is one such instance. When scholars such as Norton (1996, pp. 340-3), Häggqvist (1996, p. 114), Gendler (2000, p. 41), Atkinson (2003, pp. 219-24), and Picha (2011, p. 181) employ this particular thought experiment to defend their positions, they each reconstruct the thought experiment in a different way and they arrive, not surprisingly, at different results. Furthermore, the origin of these differences remains unclear since they are, for the most part, ignored. The scholars debate 'the nature of thought experiments' and whether they produce a priori or a posteriori knowledge but, judging from the differences in their analyses, they do not seem to share enough common ground for actually tackling these issues based on concrete examples. Swept under the rug, the super-set *A* remains fuzzy and the reconstruction method remains a matter of personal interpretation.

The argumentation-theoretical approach I will be employing can bring some clarity into these issues. The pragma-dialectical theory of argumentation proposes tools for the reconstruction of speech acts performed in exchanges directed at resolving differences of opinion (van Eemeren & Grootendorst, 1984; 2004; van Eemeren, 2010).<sup>4</sup> It is one of the chief analytical tasks in pragma-dialectics to determine *whether* a text contains argumentative moves and, if so, *what kind* of argumentative moves it contains (van Eemeren & Grootendorst, 1984, pp. 75-95). The theoretical model of a *critical discussion*, which offers a specification of the types of moves that

<sup>4</sup> The theory also has a normative component consisting of dialectical rules for evaluating argumentative discourse (see van Eemeren & Grootendorst, 2004). For the present purpose, this normative component can be left aside.



can contribute to resolving a difference of opinion, is employed as a basis for carrying out these analytical tasks. In the case at hand, the question “Is Jackson’s contribution an argument?” will be answered by reconstructing Jackson’s speech acts in terms of a critical discussion.

Before unfolding the details of the pragma-dialectical model of a critical discussion, let me answer two objections. First, one might object that analysing thought experimentation as an *argumentative* discussion (or a form of *argumentative* discourse) will in fact bring the ‘argument view’ through the back door. This question can be answered briefly by pointing out that putting forward argumentation is but a *part* of having an argumentative discussion. Other argumentative moves such as establishing a starting point, putting forward a standpoint, and asking a critical question have an equally important function in an argumentative discussion and are thus, alongside argumentation, part of what it means to test the acceptability of a point of view. An analysis of Jackson’s contribution *can* – but *need not* – reveal that his speech acts must be reconstructed as the argumentative move ‘putting forward argumentation.’

A second and more substantive form of doubt regards the use of pragmatic tools for tackling the set-membership under consideration. The analytical question of classifying thought experiments as arguments is often seen as an epistemological one or, in any case, as having epistemological consequences regarding our understanding of thought experimentation as a process of scientific discovery. As such, some scholars involved in the above-mentioned debate might be sceptical of the choice of a theory of (argumentative) language-use. This objection can be met by pointing out that the ‘raw’ thought experiment is a piece of *discourse*. All entities that have received the label “thought experiment” can be described as events in which one scholar aims to contribute to an academic dispute by putting forward a series of *speech acts*.<sup>5</sup> While various epistemic processes are involved in putting forward these speech acts, we can get acquainted with these processes only *via* the speech acts. What Jackson is expressing in written

<sup>5</sup> The interaction between the scholar and the audience need not, of course, be fully *explicit*. For instance, in Jackson’s case, the interaction with the physicalist readership is implicit – the text being monological – but that stretch of discourse can only be fully understood if seen as a contribution to an ongoing discussion on the acceptability of physicalism.

discourse is, so to speak, our only window towards his reasoning and the reasoning he expects from his readership (or, *à la* Brown, the *grasping* of whatever law Jackson might be said to defend). Understanding the kind of knowledge produced/employed during thought experimentation is, then, dependent on understanding the parties' communicative interaction.

I certainly do not mean to say that analysing Jackson's linguistic behaviour from a pragma-dialectical perspective will *solve* the various epistemological problems that have arisen around thought experimentation. Questions such as "Is the thought experimenter's conclusion based on *empirical* knowledge?" or "Does the thought experimenter's conclusion count as *new* knowledge?" cannot be answered, or even approached, with pragmatic tools. But these questions are, nevertheless, dependent on our having a stable image of argumentative discourse (the super-set 'A') and a stable method for reconstructing Jackson's argumentative moves.

#### 4. Argumentative moves in a thought experiment

A pragma-dialectical reconstruction starts from a basic distinction between *settling* and *resolving* a difference of opinion on the acceptability of a proposition (van Eemeren & Grootendorst, 1984, p. 81-2). Settling takes place when the parties involved decide to deal with their disagreement by turning to some external third-party authority or when they leave the matter to chance (say, by flipping a coin). Resolving the difference of opinion is a process in which the parties involved try to reach a decision regarding the acceptability of the proposition at issue by means of an argumentative discussion. The analytical basis for reconstructing pieces of discourse as parts of an argumentative discussion is the above-mentioned ideal model of a *critical discussion* (van Eemeren & Grootendorst, 2004, pp. 42-68). The critical discussion is to the argumentative discussion as the blueprint of a building is to the actual construction. When a speech act is reconstructed in terms of a critical discussion, the analyst categorizes it as an *argumentative move* performed by that speaker (van Eemeren & Grootendorst, 2004, pp. 62-7).

According to van Eemeren and Grootendorst (1984, p. 95-109; 2004, p. 67), four types of argumentative moves can be distinguished: moves performed via *assertives*, moves performed via *commissives*, moves per-

formed via *directives* and moves performed via *declaratives*. Figure 1 offers an overview of these four major types, together with the argumentative moves performed within each type and a “standard formulation.”<sup>6</sup>

**Figure 1.** Types of argumentative moves in an argumentative discussion.

Type of speech act	Argumentative moves	Sample formulations
<b>Assertives</b>	Expressing a standpoint Advancing argumentation	<i>‘I think p is the case.’</i> <i>‘q, so it should be clear that p.’</i>
<b>Commissives</b>	Accepting or rejecting standpoints/starting points  Accepting or rejecting argumentation	<i>‘I do/don’t agree with 1’</i>  <i>‘Regardless of q, I disagree with p’</i>
<b>Directives</b>	Challenging to defend Asking critical questions Requesting explanation/definition  Proposing starting points	<i>‘Why would you say p is the case?’</i> <i>‘But why would p follow from q?’</i> <i>‘What do you mean by p...?’</i>  <i>‘Let’s say p is the case...’</i>
<b>Declaratives</b>	Usage declaratives  Deciding to start/end a discussion  Establishing the result of a stage/of the discussion	<i>‘By “rabbit” I mean any kind of rabbit’</i> <i>‘OK, we are in agreement now’</i>  <i>‘So you see that p is the case after all’</i>

<sup>6</sup> The original formulation given by van Eemeren and Grootendorst was slightly modified for the present purposes. First, I add the sub-type of *proposals* to the type of argumentative moves performed through directives. Alongside requests and challenges, proposals cover those argumentative moves through which a participant attempts to get the other party to behave in a certain way (namely, to follow the proposed course of action). A second modification is that the speech acts that involve some form of mutual decision taken by both parties in the discussion, moves such as “deciding to start the discussion” or “establishing the result of the discussion,” are classified as declaratives. The illocutionary point of deciding something regarding the discussion is to create hitherto inexistent conditions in that discussion, an effect which is achieved by declaratives, i.e. by jointly declaring the condition to exist. With these two modifications, the applicability of the model to thought experiments is increased, for, as it will become apparent, proposals and declaratives are key argumentative moves in a thought experiment.

Examined through this model, a thought experiment will appear as a sequence of argumentative moves performed by two discussants in an attempt to resolve their difference of opinion concerning the ‘targeted’ academic claim. It should be clear, given the distinctions in Figure 1, that there is more to an argumentative discussion than putting forward argumentation. While in everyday language we can refer to an entire discussion as an ‘argument’ and to the parties involved as ‘arguing,’ this is strictly speaking a misnomer, for in a technical sense the speech act of argumentation is only one of the moves that can be performed in the resolution process. Let me now turn to Jackson’s contribution to the academic debate on physicalism.

The difference of opinion between Jackson and physicalists becomes explicit once both parties have put forward their standpoints with respect to the proposition that all knowledge is physical. Long before Jackson’s paper, physicalists have held a positive standpoint with respect to this proposition.<sup>7</sup> Jackson’s negative standpoint can be reconstructed from his emphatic “ergo-move” in line 14 (“*Ergo* [...] physicalism is false), but also, more directly, from an earlier passage in the same article, where he writes: “I think that there are certain features of the bodily sensations especially, but also of certain perceptual experiences, which *no amount of purely physical information includes* (Jackson, 1982, p. 127, emphasis added). Let us use the label *C* for the physicalist claim about the natural world and our knowledge of the world. The physicalist point of view will be *C* is the case, i.e.

I *assert* that (*C* is the case),

while Jackson’s point of view will be that *C* is not the case, i.e.

I *assert* that (*C* is *not* the case).

Since both physicalists and Jackson have continued discussing the acceptability of *C* (see Ludlow et al., 2004), we might assume that at least part of what followed is an attempt to resolve the difference of opinion. The next step is thus to investigate the role of the imaginary scenario played in this

<sup>7</sup> See, for example, Neurath (1931). For further discussion of physicalism as a philosophical principle see Pettit (1993).

resolution process. For ease of reference, I will reproduce the first part of the original excerpt below.

- 1 Mary is a brilliant scientist who is, for whatever reason, forced to investigate the
- 2 world from a black and white room via a black and white television monitor. She
- 3 specializes in the neurophysiology of vision and acquires, let us suppose, all the
- 4 physical information there is to obtain about what goes on when we see ripe
- 5 tomatoes, or the sky, and use terms like 'red', 'blue', and so on. She discovers, for
- 6 example, just which wavelength combinations from the sky stimulate the retina, and
- 7 exactly how this produces via the central nervous system the contraction of the vocal
- 8 chords and expulsion of air from the lungs that results in the uttering of the sentence
- 9 'The sky is blue'.

(Jackson, 1982, p. 130)

Jackson's speech acts from the beginning of this excerpt seem to be reconstructible as assertives. However, the use of a let's-construction in line 3 ("let us suppose") clarifies the status of these acts as *proposals* of a joint activity (Clark, 1993). In this case, the joint activity proposed is that of discussing the acceptability of *C* based on the imaginary scenario. I will use the term *supposition* for the propositions that make up the imaginary scenario on the basis of which Jackson proposes to discuss. Examples of suppositions are thus:

- (supposition<sub>1</sub>) There is a scientist named Mary;
- (supposition<sub>2</sub>) Mary is in the described situation;
- (supposition<sub>3</sub>) Mary specializes in neurophysiology etc.

The set of all suppositions proposed in a certain discussion will be referred to as the *scenario* in that discussion. Jackson's argumentative moves in lines 1-9 can thus be represented individually:

- I propose that (listener and I (discuss as if [supposition<sub>1</sub>] is true),
- I propose that (listener and I (discuss as if [supposition<sub>2</sub>] is true),
- I propose that (listener and I (discuss as if [supposition<sub>3</sub>] is true), etc.

or they can be represented collectively as:

I propose that (listener and I (discuss as if [*scenario*] is true)

Proposals of suppositions can prepare the way for the actual exchange of arguments but only if the other party *accepts* the proposal. However, since there is no turn-taking involved in the case at hand, the readers do not actually get the chance to respond to Jackson's proposals. However, the other party's *acceptance of the proposals* can be reconstructed from Jackson's rhetorical questions in lines 9-10: "What will happen when Mary is released from her black and white room or is given a colour television monitor? Will she learn anything or not?" Jackson's questions about Mary would be pragmatically odd unless the preceding proposals were (assumed to be) accepted. Put differently: had the situation been dialogical and had the listener *rejected* Jackson's proposal, continuing to refer to Mary and her black-and-white monitor would have been uncooperative. The reader's inevitable silence is then, rightfully or not, taken as a sign of acceptance. Mirroring the form of the argumentative moves above, these moves can be represented as follows:

I accept that (author and I (discuss as if [*scenario*] is true)

Notice that the predication act in both the proposal and the acceptance of the proposal is the same, namely, 'discuss as if [*scenario*] is true.' A proposal-acceptance sequence that shares this predication act can be referred to as *introducing suppositions* (or *introducing the scenario*) *in the discussion*. Introducing suppositions in a discussion involves both parties of the discussion: a party who proposes the scenario and a party who accepts it.

Once the suppositions are introduced in the discussion, Jackson proceeds to discuss as if the scenario is true. He does so by advancing argumentation in which the scenario appears as an antecedent. This is, generally speaking, what it means to suppose something *for the sake of argument* – it means to employ the supposed content as an antecedent in the assertives you bring forth as arguments. These assertives can contribute to the resolution process by convincing the other discussant of the unacceptability of the discussed claim. The passage that interests us is emphasized below:

10 [...] or is given a colour television monitor? Will she learn anything or not? *It seems*  
 11 *just obvious that she will learn something about the world and our visual experience*  
 12 *of it. But then is it inescapable that her previous knowledge was incomplete. But she*  
 13 *had all the physical information.* Ergo there is more to have than that, and  
 14 Physicalism is false.

(Jackson, 1982, p. 130)

Jackson does not begin every assertive in lines 11-13 with an explicit mention of the scenario under which he is labouring. This would be tedious and unnecessary. Simple references to elements from the scenario (e.g. “*she* learns” “*her* knowledge”) are enough to signal that his assertives are to be understood as conditionals with the scenario in the antecedent. Two such assertives make up Jackson’s main argument: on the one hand, Jackson asserts what would *actually* happen in that scenario, namely, Mary would learn something; on the other hand, Jackson asserts what would happen in that scenario if *C* were true, namely, Mary would not learn. The first one is made directly in line 11. The second one is made indirectly when the first one is qualified as “inescapable” (line 12), suggesting that physicalists would be inclined to resist the consequence that, if *C*, Mary will not learn anything in the scenario. The relationship between these two assertives is represented as a simple argumentation structure (see van Eemeren & Grootendorst, 1992, pp. 73-85).

1.  $\neg$  (C)

1.1 If the *scenario* occurs, then Mary learns something new

1.1' If *C*, then in the *scenario*, Mary doesn't learn anything new

A full reconstruction of Jackson’s case against physicalism can take into considerations other parts of the quoted passage. For example, Jackson adds “something about the world and our visual experience of it” in line 11 which can be taken as a sub-argument for (1.1). Further, the addition “but she had *all* the physical information” in line 12 – note Jackson’s own emphasis on “all” – constitutes a way of compelling physicalists to accept that which they might be tempted to resist in order to defend their position, namely, the consequence drawn from *C* that Mary does not learn anything new. Jackson’s claim is, then, that Mary’s having all the physical informa-

tion is sufficient for claiming Mary's learning something new. Jackson's full case against *C* can be represented as a complex argumentation structure (see van Eemeren & Grootendorst, 1992, pp. 73-85).

1.  $\neg C$

1.1 If the *scenario* occurs, Mary learns something new

1.1.1 If the *scenario* occurs, Mary learns something about the visual experience of objects

(1.1.1' Learning about visual experience in such a scenario is learning something new)

1.1' If *C*, then if the *scenario* occurs, Mary does not learn anything new

1.1'.1 If the *scenario* occurs, Mary has all the physical information

(1.1'.1' In one has all the physical information in such a scenario, then if *C*, one does not learn anything new)

The final argumentative move made by Jackson is that of *proposing the result* of the argumentative discussion. Jackson performs this move by announcing, in the emphatic way already signalled, that physicalism "is false" (line 14). It should be obvious that Jackson is not thereby ending the discussion, since, conventionally speaking, academic disputes do not come to an end by decree. Thus, Jackson's last move is *not* a declarative – which has been described as an argumentative move performed by both parties – but rather a proposal that the two parties perform this declarative, namely,

I propose (we declare (*T* was shown to be unacceptable)

The discussion between Jackson and physicalists stretched for a long period of time (Ludlow et al., 2004). Eventually, after physicalists themselves made other argumentative moves, Jackson retracted his negative standpoint. The thereby established result is that *C* is acceptable after all. In Jackson's own words:

*On the face of it*, physicalism about the mind across the board cannot be right. Any purely physical account of what goes on in us and of how we relate to our surroundings leaves out the phenomenal and conscious



side of psychology. [...] I now think that what is, on the face of it, true is, on reflection, false. I now think that we have no choice but to embrace some version or other of physicalism. (Jackson, 2004, p. xvi)

## 5. The argumentative dimension of thought experiments revisited

The argumentative moves reconstructed from Jackson's paper are not meant to exhaust the topic of the reconstruction of this and other thought experiments. They do, however, provide a basis for revisiting the argument/no-argument debate.

What the analysis above has indicated is that, as a form of academic interaction, putting forward a thought experiment consists of a variety of argumentative moves. The expression 'to put forward a thought experiment' covers in its present usage a more complex form of linguistic behavior than, say, 'to put forward a question' or even 'to put forward an argument'. A more appropriate label would perhaps be 'to engage in thought experimentation' – an expression that suggests more clearly the interactional character of the practice. An instance of thought experimentation is a structured dialogical process whose aim is (*inter alia*) to resolve a difference of opinion. We can only 'see' the antagonist's moves, the protagonist's moves being quoted, reported or left implicit, but this does not change the speaker's argumentative moves. The antagonist is in the position of someone displaying his tangoing skills with an invisible partner: his moves are still *meant* as tango moves even though, as we know, the real process takes two.

Approached in this way, it is fairly straightforward to note that thought experiments are not just arguments. Even though arguing is in a sense the most important of Jackson's argumentative moves, it is not the only one. Other moves prepare the way for, and offer a continuation to, Jackson's act of argumentation and it is the total of these moves that make up an instance of thought experimentation. At the same time, and keeping in mind Fisher's dilemma (either reconstruct the scenario as asserted or change the definition of argument), it is equally clear that those argumentative moves through which Jackson aims to convince physicalists are nothing but ar-

guments. This dissolves the dilemma, for the presence of a propositional content that is supposed, viz. the imaginary scenario, does *not* go against a definition of argumentation as a complex speech act based on *assertives*. Suppositions not being themselves speech acts, but rather propositional contents of various speech acts such as proposals or acceptances, the ‘assertive-based’ definition of argumentation and the idea that the story is *not* asserted fit perfectly together.

This brings me to a last point concerning the role of assertives in thought experiments. As I have already mentioned in section 2, it is not unusual to point out that thought experiments are but rhetorically embellished *reductio ad absurdum* arguments. This is incorrect from a pragmatic point of view (given that a thought experiment is not only a set of assertives), but one might interpret the parallel in a logical sense, viz. “OK, a thought experiment is an interaction in which the speech acts have various dialectical functions, but the *assertives* performed by one of the discussants support this discussant’s conclusion through a *reductio* structure.” This reading makes the parallel more acceptable but it is a rather limited analytical insight for it concerns only the discussant’s (Jackson’s) argumentation at one level. A thought experimenter’s argumentation structure is more complex and does not need to assert (or posit, or assert provisionally or any such thing) the opposite of that which the discussant wishes to refute. These two structures are compared in Figure 2.

**Figure 2.** The structural differences between a *reductio* structure and the argumentative structure in a thought experiment.

Reductio ad absurdum argumentation	Argumentation in a thought experiment
1. $\neg\neg p$ 1.1 $q$ 1.1' $p \rightarrow \neg\neg q$	1. $\neg\neg p$ 1.1. <i>scenario</i> $\rightarrow \neg\neg r$ 1.1.1 <i>scenario</i> $\rightarrow s$ ... 1.1.1' $(q \rightarrow s) \rightarrow (q \neg r)$ 1.1' $p \rightarrow \text{scenario} \rightarrow r$ ...

What Figure 2 shows, aside from the difference in complexity, is that a thought experimenter's argumentation contains only conditional statements whereas a *reductio* must, at some point, lay claim to something really being the case.<sup>8</sup> For mathematical demonstrations all this might be irrelevant, because one might jumble the variables in such a way so as to make the structure on the right be identical with the one on the left. But in a real-life argumentative discussion the two are different cases one brings against *p*.

## 6. Conclusion

In light of what has been discussed, a reformulation of the main question seems fitting. While not strictly speaking nonsensical, the question 'Are thought experiments arguments?' carries with it the presupposition that, pragmatically speaking, the label 'thought experiment' captures language-use at the same level as, say, 'claiming' or 'proposing.' Because of its strange formulation, we might be inclined to answer it as follows: thought experiments are simultaneously something more than argumentation (various argumentative moves performed) *and* nothing but arguments (the assertives based on the imaginary scenario indeed have the function of convincing). A more appropriate and more basic formulation would be: 'What kind of argumentative moves are exchanged in a thought experiment?'

With the help of tools developed in the pragma-dialectical theory of argumentation, I have attempted to give an answer to this latter question. A thought experiment was reconstructed as a series of argumentative moves performed in an academic discussion on the acceptability of a claim. Some of these argumentative moves were indeed instances of argumentation, this argumentation resembled, albeit at a superficial level, a *reductio ad*

<sup>8</sup> Additionally, the reconstruction might constitute a basis for providing an answer to the epistemological question regarding the *novelty* of the thought experimenter's conclusion, viz. *How can a thought experimenter produce new knowledge without any claim concerning how the world is?* If the reconstructed argumentation structure is correct, the answer seems to be: by basing his argumentation exclusively on conditional statements, i.e. not on claims about how the world is but on claims about how the world would be. This needs, of course, further investigation.

*absurdum*. But the rest of the interaction was equally important and the pragma-dialectical reconstruction has hopefully emphasized this point. It is through the complex interaction of two disagreeing parties that thought experiments are carried out. Consequently, it is through a systematic treatment of this interaction that thought experiments can be better understood as forms of academic activity.

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